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Analysing student perceptions of transferable skills via undergraduate degree programmes

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ABSTRACT Despite the assumption that ‘transferable’ skills are part and parcel of a graduate’s portfolio, there is a lack of information about the extent to which such skills may be perceived by students to be valuable. Although the skills agenda has been at the forefront of Higher Education (HE) provision for some time, contemporary studies focus upon measurement issues and neglect the process aspects of skills learning and development. There is also a lack of research to support methodologies aimed at promoting optimal transfer of skills to work environments. It is apparent that there is a certain lack of clarity about the linkage between the nature of the learning environments that may be provided, and the types of outcomes that are purported to accrue. Accordingly, focusing on this context, the investigation had two objectives: first, to assess students’ perceptions of the knowledge and skills acquired during their undergraduate degree programmes; and second, to evaluate the perceived effectiveness of the strategies adopted in respect of learning transfer. At the University of Luton 116 Level Three students completed a questionnaire that covered all the major skill descriptors of the university’s skills template. The results revealed statistically significant differences between the two closely related programmes in terms of perceived skills acquisition. Although the findings indicated that students were moderately satisfied with the skills acquired, a potential cause for concern was that one in five students did not perceive any transfer strategies to be effective.

KEYWORDS: *learning transfer, skills development, student perceptions, transferable skills*

Introduction

The issue of skills development has been at the forefront of the Higher Education agenda for some time (CVCP, 1998). Over the last five years, there has been increasing awareness about the need for a post-16 education experience that provides breadth, flexibility and an understanding of the need for progressive skills development as students move into higher education. The introduction of Curriculum 2000, for example, heralded a move towards raising the profile of key skills within the context of combined vocational and generalist programmes. Skills relating to communication, application of number, information technology and self-reliance (amongst others) have been referred to as 'transferable', 'common core', and 'key', depending upon the particular initiative, organization or sector under consideration. This confusion over terminology has not done much to help practitioners differentiate skills between levels or sectors. Indeed, despite widespread efforts to address the skills agenda, there is a dearth of empirical evidence to support the efficacy of the initiatives that have been adopted, and a lack of research about the issue from the student perspective. In addition, the problem of 'learning transfer' appears to have received scant attention, regardless of the prevalent assumption that such skills are, in fact, transferable (Holmes, 1997).

The issue of transferable skills

There is a growing body of knowledge on the definition, categorization and application of key skills (Dench, 1995). A number of authors have developed generic frameworks which may be applied sequentially throughout an individual's life cycle comprising foundation level skills such as basic knowledge or personal traits, practical skills which include occupational knowledge or personal attributes such as communication or empathy, and advanced capabilities comprising generic competencies or 'meta-abilities' like leadership or teamworking (Butcher et al., 1997). One of the major trends in skills development has been a move towards experiential approaches combining knowledge and skills practice (Kolb et al., 1984). Hence the emphasis has moved towards the idea of students interacting with their environment by constantly reviewing experiences and linking fresh material to prior knowledge (Mumford, 1987).

In 1995, the Association of Graduate Recruiters (AGR) suggested that graduates needed to be both specialists and generalists, able to work equally well individually and within a team. Since the report was published, there have been many debates about the issue of *graduateness*. Employers indicate that they want employees who can use their skills and abilities to develop

the organization. They want colleagues who exhibit an ability to learn and add to their knowledge and skills in a variety of situations (Harvey et al., 1997). In short, they want people who can deploy higher level skills such as analysis, critique, synthesis and multi-layered communication to facilitate effective team-working (p. 2).

Although the idea of students as self-reliant learners is not new, consideration of this issue appears to be missing from many accounts on skills learning which are driven principally by attempts to clarify and determine the nature of the skills which may be appropriate (see Drew, 1998, for a review). Comparatively little research has been devoted to students' perceptions of the skills acquired and, consequently, there is a lack of empirical evidence to support the efficacy of methodologies in promoting optimal skills development. Hence, the first objective of the study was to assess students' perceptions of the knowledge and skills acquired during their undergraduate programmes.

Learning transfer

The term 'learning transfer' refers to a student being able to apply what is learned during instruction to a different situation – usually the intended real performance (Pennington et al., 1995). Given the differences between the educational environment in which skills are learnt and the business settings in which skills are applied, transfer is arguably the crucial factor. However, the history of research in this area reveals cycles of strong claims and corresponding curricular changes, followed by failure to demonstrate transfer (Idol and Jones, 1991). Debates about the transfer of cognitive skills have focused around the issue of 'fidelity', that is, the extent to which tasks in the learning domain are similar to those in the real life situation. Once again, these considerations hold considerable importance for the HE domain, especially since contrasting approaches, apparent in the commercial sector, may either emphasize or consciously minimize the contrast between the learning domain and the application setting.

Transfer of learning has been considered from two perspectives, both of which have implications for the design and potential outcomes of programmes concerned with skills development. Anderson (1982) proposed that, in order for learning to be transferred from one situation to another, the tasks in the learning domain must closely replicate reality. Under this approach, knowledge acquired while learning the skill is encapsulated in procedures called production rules. Transfer of learning is said to occur when the tasks share similar production rules. This is in fact an argument for *high fidelity*, where there is a close match between task elements in the learning domain and the tasks required in the application setting

(Anderson, 1982). In contrast, Bransford et al. (1979) have suggested that low fidelity is needed for transfer. This idea involves increasing the similarity between the cognitive processing requirements of the tasks in each situation. What is important therefore, are the cognitive processes involved in the tasks, not the tasks themselves. While it was originally assumed that an increase in fidelity would enhance transfer of learning, recent research indicates a more complex, non-linear relationship. As Holmes (1997) observes, despite the number of critical analyses which have highlighted the process aspects and associated learning issues (Gubbay, 1994), proponents of the skills project have avoided responding to such criticism (Griffin, 1994). Indeed, the idea that transfer just 'happens' has been so powerful an assumption as to be deemed beyond discussion (p. 134).

In 1997, Coopers and Lybrand were commissioned by the Committee of Vice Chancellors and Principals of the Universities of the UK (CVCP) and the Department for Education and Employment (DFEE) to undertake a project to promote skills development in UK higher education institutions. In 1998, the final report noted that there was a dearth of empirical work about how particular kinds of HE experience impacted upon the individual contributions that graduates made in their first and subsequent employment (CVCP, 1998: 12–13). Whilst it is beyond the scope of this article to go into more detail, it appears that the problem of transfer has received scant attention. Research in this area appears to offer little or no guidance as to the optimum approaches, or the associated learning environments that may optimize the chances of focused learning. Indeed, the adoption of a clear theoretical paradigm would appear to hold considerable promise for both the research and evolution of the HE skills agenda. Accordingly, the second objective was to evaluate the perceived effectiveness of the strategies adopted in respect of learning transfer.

In summary, this investigation had two objectives. The first was to assess students' perceptions of the knowledge and skills acquired during their undergraduate programme. The second objective was to evaluate perceived effectiveness of the strategies adopted in respect of learning transfer.

Methodology

Data collection was undertaken using a self-completion questionnaire: an appropriate method to collect quantitative data from a relatively dispersed sample whilst allowing for anonymity for respondents, potentially enhancing the reliability and validity of the data collected (Frankfort-Nachimas and Nachimas, 1996). The questionnaire consisted of three sections: (1) Skills, (2) Knowledge and (3) Learning Transfer. The Skills section consisted of 19 questions covering four generic skill descriptors: (1) information

retrieval and handling [six questions], (2) communication and presentation [five questions], (3) planning and problem solving [five questions], and (4) social development and interaction [three questions]. Under each of the skill descriptors, students were prompted by the statement:

‘As an outcome of my degree programme to date, I can . . .’

They were then prompted by a series of further statements pertinent to the skill descriptors. For example, under ‘information retrieval and handling’, they were prompted by:

‘Identify my own information needs to support problem solving.’

All of the statements were edited from the University of Luton’s Transferable Skills Position Statement (1997). A Likert scale, coded ‘strongly agree’ (= 1) to ‘strongly disagree’ (= 5), was used to identify the extent of students’ perceived skill acquisition.

The *Knowledge* section consisted of two items: (1) how familiar the students were with the core knowledge base of their degree programme, and (2) if they understood the provisional and transient nature of knowledge. A Likert scale, as described for the *Skills* section above, was again used to identify the extent of perceived knowledge acquisition. Finally, students were also asked to list any other kinds of knowledge, other than those outlined above, that had been gained as a result of their degree programme.

The *Learning Transfer* section asked students to list up to three ways in which their degree programme had helped them to transfer learning from their course into other situations, for example, work or leisure activities. A Likert scale, coded ‘very effective’ (= 1) to ‘not at all effective’ (= 5), was used to help students identify the extent of perceived learning transfer.

The questionnaire was administered to final-year students at the University of Luton. The sample was taken from two courses, Sport Studies (SOF) and Sport and Exercise Science (SES). Both programmes purported to cover the full range of skills represented by the University of Luton skills template. Participation in the study was voluntary, and participants had the right to withdraw at any stage. 116 responses were obtained. The students were predominantly registered on BA Sport Studies (SOF – 36.2%) and BSc Sport and Exercise Science (SES – 57.8%) programmes. This amounted to approximately 60 percent and 70 percent of the cohort of Level Three SOF and SES students respectively. The questionnaire was administered by staff at the university during October/November 2003. Following standardized instructions, students were asked to complete the questionnaire at the beginning of either a lecture or seminar. Questionnaires were completed with the staff present, and were returned to staff immediately after completion.

Results

Objective one: To assess students' perceptions of the knowledge and skills acquired during their degree programmes. The mean response ($n = 116$) on the scale of 1–5 ('strongly agree' to 'strongly disagree') was 2.2 ± 0.2 (mean \pm SD). Table 1 displays the mean and standard deviation for all of the questions, grouped by section.

The mean response (\pm SD) on the scale of 1–5 ('strongly agree' to 'strongly disagree') was 2.3 ± 0.5 and 2.1 ± 0.4 ($p < 0.05$) for SES and SOF, respectively. Thus, on average, SOF had more favourable responses to the questionnaire than SES. In addition, there were six individual questions where SOF had significantly more favourable responses in comparison to SES ($p < 0.05$). These included three questions relating to communication and presentation, two questions relating to social development and interaction, and one question related to planning and problem solving.

Objective two: To evaluate the effectiveness of the strategies adopted in respect of learning transfer. Twenty-three students (20% of the sample) did not respond to the question concerning the transfer of learning from the degree programme to other situations (for example, work or leisure activities). Interestingly, 19 of the non-respondents on this question (83% of non-respondents) were from the SES programme. From those that did respond, the three most popular transfer of learning responses were 'communication – oral and written' (38%), 'interaction with others' (34.5%) and 'applied knowledge' (31%).

Discussion

Students' perceptions of the knowledge and skills acquired during their undergraduate degree programmes

The findings demonstrate that students perceive that they have acquired a variety of skills as a result of their undergraduate work. Given that the sample comprised of final-year students approaching the end of their programme of study, the results broadly support the idea of embedding skills in the HE curriculum (Fallows and Steven, 2000). A key factor identified was an apparent lack of awareness among some sport students of the need for interpersonal skills for employment. They did not appear to be able to communicate the qualities that they had to prospective employers and thus, employers did not perceive that students possessed such skills. It would appear that large numbers of students attain the relevant awards, but what they need is experience. This issue could be addressed in a number of ways, including more extensive use of work placements and sandwich degrees, as well as approaches which utilize course design and delivery to

Table 1 Mean scores and standard deviations

Skills Area	Mean (all)	SD (all)	Mean SES	SD SES	Mean SOF	SD SOF	Difference (SES-SOF)
<i>Information retrieval and handling</i>							
1. Identify information needs to support problem solving	2.2	0.6	2.2	0.7	2.1	0.5	0.1
2. Complete an information search using a range of primary and secondary sources	1.8	0.7	1.9	0.7	1.7	0.5	0.2
3. Draw independent, accurate conclusions from information searches	2.2	0.7	2.2	0.8	2.1	0.5	0.1
4. Analyse data using appropriate techniques	2.8	1.0	2.9	1.0	2.6	0.9	0.3
5. Use appropriate information technology resources independently	2.1	0.8	2.2	0.9	1.9	0.7	0.3
6. Seek, describe and interpret information within the context of my degree discipline	2.2	0.7	2.3	0.8	2.1	0.7	0.2
<i>Communication and presentation</i>							
7. Produce a complex piece of work which demonstrates a grasp of the vocabulary of my degree subject	2.1	0.7	2.1	0.8	2.0	0.6	0.1
8. Use a range of skills of written expression appropriate to my subject	2.1	0.6	2.1	0.6	2.1	0.7	0
9. Assess the quality of oral communication and identify areas for improvement	2.4	0.8	2.5	0.7	2.1	0.7	0.4*
10. Deliver a paper or presentation which succeeds in communicating a series of points effectively	2.3	0.9	2.5	1.0	2.1	0.7	0.4*
11. Communicate effectively in the context of my degree subject, both orally and on paper	2.4	0.7	2.6	0.7	2.2	0.7	0.4*
<i>Planning and problem solving</i>							
12. Decide on action plans and implement them effectively	2.3	0.8	2.6	0.8	2.2	0.8	0.4
13. Manage time effectively in order to achieve goals	2.6	1.0	2.3	1.0	2.5	1.0	0.2
14. Clearly identify criteria for success and evaluate performance against these criteria	2.3	0.8	2.6	0.7	2.1	0.7	0.5*
15. Produce creative and realistic solutions to complex problems	2.4	0.7	2.5	0.7	2.2	0.7	0.3
16. Apply particular tools and methods accurately to a well-defined problem and draw appropriate conclusions	2.3	0.7	2.4	0.7	2.2	0.6	0.2
<i>Social development and interaction</i>							
17. Formulate effective approaches for achieving goals when working with others	2.2	0.8	2.3	0.8	2.0	0.6	0.3
18. Participate effectively as a team member and collaborate with members of the team	1.9	0.8	2.0	0.9	1.7	0.6	0.3*
19. Work with and meet obligations to others	2.0	0.8	2.1	0.8	1.8	0.6	0.3*
<i>Learning transfer</i>							
20. Student response 1	2.2	0.8	2.3	0.8	2.1	0.6	0.2
21. Student response 2	2.3	0.7	2.4	0.8	2.3	0.7	0.1

* Items in bold indicate a statistically significant difference between SES and SOF ($p < 0.05$)

facilitate more opportunities for 'quality practice', to maximize the chances of skills application in the workplace.

Sport Studies students had more favourable responses to six of the questions including three from the section on 'communication and presentation' and thus for this cohort at least, the results suggest differences in perception between SOF and SES students. This was a surprising result, since the full range of skills were purportedly embedded across both programmes of study. One explanation for this could be found in the 'scientific' vs. 'social science' deviation, for example SES students may have been more inclined towards skill sets incorporating statistical analyses or graphical data, as such skills are likely to be required more frequently in their programmes. This factor may also explain the SOF result, which indicated preferences for 'softer' skills, such as those associated with communication or social interaction. This finding notwithstanding, there is mounting evidence to indicate that team-working and communication skills are valued by employers and that this was especially important at middle management level (Graduate Recruitment and Development in the Sport and Recreation Industry Project, 1997). This not only highlights the importance of getting the skills agenda right, but somewhat flies in the face of many traditional approaches to HE curricula which focus upon the importance of technical or 'hard' skills and underemphasize the softer or process skills aspects (Silver, 1991).

The strategies adopted in respect of learning transfer

Twenty percent of students in the sample ($n = 23$) did not respond to the question about learning transfer, with the majority of non-respondents (78%) from SES programmes. This may be a limitation of the instrument as only one question pertained to this area, but could amount to a serious concern, given the apparent lack of awareness about the issue on the part of the SES students. Arguably, all students ought to be aware of how their studies are promoting skills transfer – especially since the cohort comprised third-year students nearing the end of their programmes. This result points to inconsistencies both within and between the SOF and SES cohorts and underlines a need for further investigation to ascertain the efficacy of the adopted transfer strategies. This finding may also highlight a lack of clarity concerning the philosophy underpinning the application of methodologies to promote skills development, as an expressed and coherent link between programme aims, methodology and outcomes was not evident from the survey responses.

For the remaining students ($n = 93$), the three most popular responses related primarily to the interpersonal domain, namely 'communication – oral and written', 'interaction with others' and 'applied knowledge'. Once

again however, there was less clarity concerning the perceived transfer of such skills, particularly amongst the SES students. Arguably, if students are applying their skills as a result of their studies, they ought to be aware of the process. Furthermore, given that the full range of transferable skills was embedded across both programmes, there may be a need to review transfer strategies in order to ensure they are clearly communicated and understood by students.

A note of caution needs to be introduced when assessing learning transfer, however. One limitation of the study may be that students find it difficult to assess the extent to which learning transfer has taken place given that they have yet to enter graduate employment. Therefore they are able to respond only in terms of *perceived* learning transfer. The findings also provide some support for the notion that more research is needed in the area of learning transfer and specifically, on the *mechanisms* by which skills may be acquired and subsequently transferred into alternative domains (Burke and Collins, 1998). Indeed, current research in this area offers little guidance about the consequences of particular course designs for learning, or about the circumstances under which transfer is most likely to occur. Thus, the underlying philosophy to be followed would seem to be a worthwhile consideration for students and tutors alike and the adoption of a clear theoretical paradigm to guide the process of course design would hold considerable promise for both research and evolution of the skills agenda.

Conclusions and recommendations

Students in both programmes perceived they had acquired a variety of transferable skills as a result of their studies, albeit that there were substantial differences within and between cohorts. A worrying finding was that a significant number of students (predominantly from the SES programme) did not respond to the question about learning transfer, although further investigation would be required to ascertain the reasons for this result.

The limitations of the study should be acknowledged. First, the questionnaire was used to measure students' perceptions of their skills development, and thus there were no opportunities to clarify these reactions. Another problem with questionnaires is that they cannot probe deeply into respondents' feelings and once they have been distributed, it is not possible to amend the items (Thomas and Nelson, 1990). The validity and reliability of the data collected and the response rates that were achieved depended, to a large extent, on the design of the questions, the structure of the questionnaire and the rigour of the piloting (Saunders et al., 2000). Thus recommendations for future work in this area would include the use of

quantitative and qualitative methodologies to enable the strengths of both to be utilized (Smith, 1975).

A number of key messages emerge from the study. The results show that not all students perceived that they were developing the full range of transferable skills, as one cohort appeared to have acquired a different, more comprehensive, skills set. Hence, for this study at least, approaches that purportedly embed skills development within the curriculum do not appear to be working as well as they should. This raises the question of what kinds of learning environment may optimize opportunities for skills development. Arguably we need to move towards a clear focus upon the *processes* rather than the outcomes of skills development programmes so that we can establish a clear rationale for the use of one methodology over another. As this study focused upon final-year degree programmes, and there was significant variation in the skills purportedly acquired, it seems clear that we should develop more robust mechanisms for measuring and assessing skills development *throughout* the undergraduate experience. Given that a significant proportion of students are likely to enter employment unrelated to their primary degree discipline, it seems likely they may be deficient in certain aspects of the skills portfolio. Once again, this underlines a clear need to understand more about the mechanisms by which skills are optimally acquired, in order to facilitate diagnostic tests to identify and address perceived skills gaps sooner rather than later. As we have identified, there is a need for methodologies that are explicit in communicating the skills agenda. Without such direction, student learning may be left purely to chance, and thus we need to find more creative ways of communicating, developing and measuring skills on an ongoing basis. One example could be to link the process of course design to the issue of learning transfer, including consideration of 'fidelity', that is, the extent to which processes/tasks in the learning domain match those in the setting where the learning is to be applied. Such a direction would enable closer analysis of the mechanisms of learning transfer and a renewed focus upon the *processes*, rather than the outcomes of skills development programmes.

An additional area for future research involves investigation into students' perceptions of transferable skills using samples from a range of undergraduate programmes across all years. The study could also be extended by data collection from a variety of HE institutions to allow a comparative analysis between institutions. The approach taken here was 'embedded' (Yin, 1994), in that there was a relatively varied sample of respondents within the single institution. However, it does need to be recognised that different HE institutions have different approaches to skills development, and such differences need to be investigated. Potential problems of such an analysis do need to be recognized, however, given the

wide variety of skills templates that have been adopted. This approach would be further enhanced by a combination of quantitative and qualitative methodologies (Saunders et al., 2000) to allow for a degree of generalizability alongside attention to the individual case (Argyris et al., 1985) and facilitate investigation into the underlying reasons for student responses, including the perceived efficacy of certain methodologies in promoting perceived skills transfer.

Further research could examine perceptions of HE tutors and employers with regard to the methodologies utilized for skills development. For example, from the HE perspective, the variable of 'teaching style' may well be important in facilitating effective skills application and from the employer perspective, support for skills application in the workplace may also be a key issue. Further investigation seems warranted to facilitate assessment of the importance of such variables in promoting skills learning and transfer.

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